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Gregory A. Nelson, Esq.
Akerman, Senterfitt & Eidson, P.A.
222 Lakeview Avenue, Suite 400
P.O. Box 3188
West Palm Beach, FL 33402-3188

EXAMINER

DOVE, TRACY MAE

ART UNIT

PAPER NUMBER

1745

DATE MAILED: 02/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/038,556	Applicant(s) SHEMBEL ET AL.	
	Examiner Tracy Dove	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,6-12,14,15 and 18-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,6-12,14,15 and 18-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to the communication filed on 11/25/05. Applicant's arguments have been considered, but are not persuasive. Claims 1, 3, 6-12, 14, 15 and 18-25 are pending. This Action is made FINAL, as necessitated by amendment.

Claims Analysis

Note the specification states lithium batteries having polymer electrolytes are generally configured as gel-type polymer electrolyte which have liquid intermixed with a selected polymer electrolyte matrix material. The polymer electrolyte functions as a separator, being interposed between the cathode and anode films of the battery (page 5, lines 15-18). Thus, the modified polymer material of the present invention functions as a separator.

Note the "polymer electrolyte" of the claimed invention is a two phase material because the claims recite a gel electrolyte (C-PVC is solid part and solvent is liquid part).

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 3, 6-12, 14, 15 and 18-25 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a homogeneous solution (single liquid phase) of C-PVC, a salt of an alkali metal and an aprotic solvent, does not reasonably provide enablement for single phase polymer electrolyte material (single solid phase or single gas phase) of C-PVC, a salt of an alkali metal and an aprotic solvent. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make

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or use the invention commensurate in scope with these claims. Applicant states the added limitation “a single phase material” is disclosed in the specification at page 21, lines 11-15. However, the specification specifically recites “a substantially homogenous *solution*”. Furthermore, this is a product by process claim limitation since the polymer electrolyte of the claimed invention must be a gel electrolyte (heterogeneous solid/liquid phases). Specifically, the modified polymer is a solid material and functions as a separator. The aprotic solvent, by definition, is a liquid. Thus, it is unclear how the specification supports the conclusion by Applicant that the polymer electrolyte containing a modified chlorine containing polymer (solid) and an aprotic solvent (liquid) is a “single phase material”.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 3, 6-12, 14, 15 and 18-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 12 recite the term “a single phase material”, which is indefinite. It is unclear how a polymer electrolyte containing a modified chlorine containing polymer (solid) and an aprotic solvent (liquid) is a “single phase material”. Examiner points out claim 11 encompasses a polymer electrolyte comprising 82% of the aprotic solvent. Again, it is unclear how a polymer electrolyte containing a modified chlorine containing polymer (solid), a salt and 82 wt% of an aprotic solvent (liquid) is a “single phase material”.

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To the extent the claims are understood in view of the 35 U.S.C. 112, 1st and 2nd, rejections above, note the following prior art rejections.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 6, 8, 10, 12, 14, 15 and 18-22 are rejected under 35 U.S.C. 102(e)/103(a) as being anticipated by, and alternatively unpatentable over, Chia et al., US 6,617,078 B1.

Chia teaches a lithium ion rechargeable battery having a negative electrode, a positive electrode and a separator/polymer electrolyte there between comprising a chlorinated polymer. The polymer is comprised of a chlorinated polyvinyl chloride (col. 2, lines 10-18). The chlorinated PVC may be used alone or blended with a terpolymer of vinylidene chloride. Chlorinated PVC is a well known commercially available material. Preferably the amount of chlorine is at least 57 percent bound chlorine in the polymer. Chlorinated PVC resins of different molecular weights and chlorine contents are commercially available (col. 3, lines 6-33).

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The electrolyte comprises a lithium salt dissolved in a mixture of organic solvents. The lithium salt may be LiPF_6 , LiClO_4 , LiAsF_6 , LiPF_6 , and combinations thereof. The solvent may be ethylene carbonate, propylene carbonate, dimethyl carbonate, and combinations thereof (col. 4, lines 51-col. 5, lines 4). See also Example 1. The anode is a lithiated carbon material (col. 3, lines 2-5). The anode may be a carbon-based material and the cathode may be a metal oxide (vanadium pentoxide) or lithium transition metal oxide (lithium manganese oxide) (col. 4, lines 8-20). The cathode comprises the chlorinated polymer.

Thus the claims are anticipated. The claims are alternatively unpatentable. Regarding the limitation “a single phase material” and “integrated with said modified polymer material, since the product of the claimed invention and the product of Chia are both polymer electrolytes having the same components (modified chlorine containing polymer, salt of an alkali metal and an aprotic solvent), they appear to be the same.

Claims 1, 3, 6-12, 14, 15 and 18-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alamgir et al., US 5,252,413 in view of Chang et al., US 5,389,463 and/or in view of Chia et al., US 6,617,078 B1.

Alamgir teaches a lithium battery using lithium ion conductive solid polymer electrolytes composed of solvates of lithium salts immobilized in a solid organic polymer matrix. In particular, lithium batteries using solid polymer electrolytes derived by immobilizing solvates formed between a lithium salt and an aprotic organic solvent(s) in polyvinyl chloride (PVC) are disclosed (abstract). The solid electrolyte comprises 50-90 wt% of the aprotic organic solvent, 5-30 wt% of PVC and 5-15wt% of the lithium salt (col. 4, lines 7-11). Figure 2 depicts results for a $\text{Li/LiMn}_2\text{O}_4$ solid polymer electrolyte cell and Figure 3 depicts results for a carbon/ LiMn_2O_4

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solid polymer electrolyte cell. The lithium salt may be LiPF_6 , LiClO_4 , LiAsF_6 or LiPF_6 . The solvent may be ethylene carbonate, propylene carbonate or γ -butyrolactone (col. 3, lines 35-65). The negative electrode may contain a carbon material, lithium or a lithium alloy such as lithium-aluminum or lithium-tin. The positive electrode may contain MnO_2 , V_6O_{13} , V_2O_5 , lithium manganese oxide, lithium polysulfide, polypyrrole, polythiophene or polyacetylene (col. 4, lines 12-42). Alamgir teaches a typical solid electrolyte comprises an aprotic solvent (propylene carbonate) containing a lithium salt (LiClO_4) immobilized in PVC. The electrolyte has conductivities of $0.9 \times 10^{-3} \text{ ohm}^{-1} \text{ cm}^{-1}$ ($0.9 \times 10^{-3} \text{ S/cm}$) at 20°C (2:18-22).

Alamgir does not explicitly state the solid organic polymer matrix (separator) of the solid polymer electrolyte contains chlorinated PVC or a chlorinated PVC having 60-72 wt% chlorine.

However, Chia teaches a lithium ion rechargeable battery having a negative electrode, a positive electrode and a separator/polymer electrolyte there between comprising a chlorinated polymer. The polymer is comprised of a chlorinated polyvinyl chloride (col. 2, lines 10-18). The chlorinated PVC may be used alone or blended with a terpolymer of vinylidene chloride. Chlorinated PVC is a well known commercially available material. Preferably the amount of chlorine is at least 57 percent bound chlorine in the polymer. Chlorinated PVC resins of different molecular weights and chlorine contents are commercially available (col. 3, lines 6-33). The electrolyte comprises a lithium salt dissolved in a mixture of organic solvents. The lithium salt may be LiPF_6 , LiClO_4 , LiAsF_6 , LiPF_6 , and combinations thereof. The solvent may be ethylene carbonate, propylene carbonate, dimethyl carbonate, and combinations thereof (col. 4, lines 51-col. 5, lines 4). See also Example 1. The anode is a lithiated carbon material (col. 3, lines 2-5). The anode may be a carbon-based material and the cathode may be a metal oxide

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(vanadium pentoxide) or lithium transition metal oxide (lithium manganese oxide) (col. 4, lines 8-20). The cathode comprises the chlorinated polymer.

Furthermore, Chang teaches a polyvinyl halide having a halogen content of at least about 55 wt% of the polymer. The polyvinyl halide may be polyvinyl chloride. The polyvinyl halide can be a post-halogenated polyvinyl halide such as chlorinated polyvinyl chloride (CPVC). The chlorine weight content of the post-halogenated polyvinyl halide should be at least about 60%, with greater than 65% being preferred (col. 4, lines 40-col. 5, lines 15).

Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one of skill would have been motivated to substitute the chlorinated PVC of Chia or Chang for the PVC of Alamgir in order to improve the properties of the battery. The use of chlorinated PVC shows enhanced high temperature stability of the battery and mechanical integrity of the separator/polymer (Chia; col. 3, lines 6-33). Chang teaches chlorinated PVC has high tensile strength and ductility (col. 3, lines 9-25). Alamgir, Chia and Chang all teach PVC materials for the separator/polymer matrix of a battery. Chia teaches that chlorinated PVC is a well known commercially available material for a battery separator/polymer matrix with different molecular weights and chlorine contents available. Chang teaches post-chlorinated PVC is a known material for use as a battery separator. Thus, one of skill would have found it obvious to substitute chlorinated PVC for the PVC of Alamgir because Chia and Chang teach chlorinated PVC is a well known battery separator/polymer matrix material.

Regarding the chlorine content of the chlorinated PVC, Chang teaches the chlorine weight content of the post-halogenated polyvinyl halide should be at least about 60%, with

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greater than 65% being preferred. Chia teaches chlorinated PVC with an amount of chlorine of at least 57 percent and chlorinated PVC resins of different molecular weights and chlorine contents are commercially available.

Regarding the limitation “a single phase material” and “integrated with said modified polymer material, since the product of the claimed invention and the product of Chia are both polymer electrolytes having the same components (modified chlorine containing polymer, salt of an alkali metal and an aprotic solvent), they appear to be the same.

Response to Amendment

The declaration filed under 37 CFR 1.132 filed 11/25/05 is insufficient to overcome the rejection of claims 1, 3, 6, 8, 10, 12, 14, 15 and 18-22 based upon Chia (US6,617,078) as set forth in the last Office action because: the declaration is not commensurate in scope with the claimed invention or the specification as filed.

The declaration filed under 37 CFR 1.132 filed 11/25/05 is insufficient to overcome the rejection of claims 1, 3, 6-12, 14, 15 and 18-25 based upon Alamgir (US5,252,413) in view of Chang (US 5,389,463) and/or Chia (US6,617,078) as set forth in the last Office action because: the declaration is not commensurate in scope with the claimed invention or the specification as filed.

The declaration states Chia discloses production of a gel electrolyte in two steps: a micro porous film separator is formed by mixing a chlorinated PVC and terpolymer of vinylidene chloride. The solid polymer separator is impregnated with 1M solution of LIPF6 in ethylene carbonate and dimethyl carbonate-based electrolytes. The declaration concludes this “conventional process clearly produces a two phase gel electrolyte, where the electrolyte fills the

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pores of the polymer”. This argument is not persuasive because Applicant has not shown the polymer electrolyte of Chia is necessarily different from the claimed polymer electrolyte. The method of preparing the electrolyte of Chia is not relevant to the claimed invention. Note Example 1 of Chia teaches “after wiping off the excess electrolyte of the surface, samples were then reweighed to determine the amount of absorbed electrolyte”. Thus, Chia teaches and suggests the salt and solvent of the polymer electrolyte are “integrated” with the modified polymer material. Examiner cannot stress enough that the “solvent” of the claimed invention is a liquid.

The declaration states the polymer electrolyte of the claimed invention “*can* be properly regarded as being a solid electrolyte, despite the fact that the solvent is a liquid at room temperature conditions”. Examiner points out neither claim 1 nor claim 12 recite any method limitations or the specific components (solvent and/or salt) used to produce the claimed polymer electrolyte. Thus, significant portions of the declaration are not commensurate in scope with the claimed invention. Applicant asserts the “polymer electrolyte of the claimed invention formed using the homogeneous process described therein **inherently** provides a single phase homogeneous polymer comprising material comprising the polymer, the salt and the aprotic solvent, provided the salt loading level is not too high. The salt levels disclosed in the application do not **appear** high enough to cause phase separation”. This argument is clearly not convincing because “appears” is not equivalent to “inherent”. Again, Examiner points out at least claims 1 and 12 do not contain any salt level limitations. At least sections 6-8 are not commensurate in scope with the claimed invention. Section 9 of the declaration (containing

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terms such as “can” and “may”) does not address the motivation for combining provided by the Examiner.

The terms “homogeneous” and “uniformly dispersed” are not equivalent terms. See attached definition of “homogeneous” from Hawley’s Condensed Chemical Dictionary.

Furthermore, the electrolyte contains as much as 82 wt% of the aprotic solvent, a liquid. It is unclear how an electrolyte that contains up to 82 wt % of a liquid can be termed “a solid”. The electrolyte described in the specification is a gel polymer electrolyte, not a solid polymer electrolyte. Applicant has not addressed this argument.

The declaration admits the aprotic solvent is by definition a liquid, but states the solvent is no longer a liquid since it does not have the characteristic readiness to flow. Applicant is partially correct. The liquid is absorbed (as in Example 1 of Chia) or complexed with the electrolyte which inhibits the ability of the solvent to “flow”. However, the resulting polymer electrolyte is not a solid, but a gel. It is well known in the art that electrolyte are considered solid, liquid or gel electrolytes. Again the polymer electrolyte of the invention containing up to 82 wt% of the aprotic solvent is a gel polymer electrolyte, not a solid polymer electrolyte.

Linden, Handbook of Batteries, teaches “another class of polymer electrolyte called “gelled” electrolytes have been developed by trapping liquid solution of lithium salts in aprotic organic solvents into a solid polymer matrix”. The gel electrolytes are made by dropping liquid electrolyte solutions into polymer cages with an immobilization procedure such as cross-linking, gelification and casting (page 36.16). Linden clearly supports the Examiner’s position that the polymer electrolyte of at least claim 1 is a “gelled” electrolyte. Applicant’s argument that the

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polymer electrolyte of claim 1 is distinct structurally from a gel electrolyte is not supported by evidence, and therefore, not persuasive.

The declaration provides data that attempts to demonstrate the differences between the claimed polymer electrolyte and the gel electrolyte disclosed in Chia and/or Chang. However, evidence of unexpected results must distinguish the claimed invention over the prior art of record. Chang teaches the solid polymer electrolyte film “preferably has a substantially uniform void volume profile” (11:59-61) and the solid polymer electrolyte is formed from a uniformly dispersed solution. Thus, the solvent/salt would be dissolved evenly throughout the solid polymer electrolyte film (uniformly dispersed). Chia teaches “solid polymer electrolytes or plasticized polymer electrolyte” (2:49-50). Furthermore, Chia states that the electrolyte (salt and solvent) is added after the cell is formed, thus, the polymer electrolyte of Chia does not resemble the AFM polymer electrolyte shown in Figure 2 of the declaration. The electrodes that sandwich the polymer electrolyte would prevent an uneven surface, as asserted by Applicant. The data does not show that the polymer electrolyte of the claimed invention is structurally different from the polymer electrolyte of the prior art.

Response to Arguments

Applicant's arguments filed 11/25/05 have been fully considered but they are not persuasive. Applicant disagrees with Examiner's assertion that “solid polymer electrolytes do not contain any solvent”. However, Applicant cannot have it both ways. Solid polymer electrolytes cannot contain solvent (liquid) and be considered single phase materials (only solid materials). The literature cited by Applicant does not provide any evidence that the polymer electrolyte of the claimed invention is a “single phase material”.

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The electrolyte film of Alamgir has the salt and solvent “immobilized” in the polyvinyl chloride. Thus, the solvent is still a liquid “immobilized” in the solid polyvinyl chloride of the polymer electrolyte, a two-phase material. The claims do not recite the phrase “solid polymer electrolyte”, but recite “a single phase material”.

35 U.S.C. 112, first paragraph

Applicant asserts the “polymer electrolyte of the claimed invention formed using the homogeneous process described therein **inherently** provides a single phase homogeneous polymer comprising material comprising the polymer, the salt and the aprotic solvent, provided the salt loading level is not too high. The salt levels disclosed in the application do not **appear** high enough to cause phase separation”. This argument is clearly not convincing because “appears” is not equivalent to “inherent”. Again, Examiner points out at least claims 1 and 12 do not contain any salt level limitations. This argument is not commensurate in scope with the claimed invention. Applicant appears to be asserting the components of the electrolyte are uniformly dispersed, which is not equated to “single phase material”.

35 U.S.C. 102(e) in view of Chia (US6,617,078)

Applicant argues that Chia teaches a two phase electrolyte and the electrolyte fills the pores of the polymer. However, the electrolyte (solvent and salt) is absorbed by the solid polymer of Chia, hence, the teaching by Chia that the electrolyte is a gel polymer electrolyte. Both Chia and the claimed invention teach a two phase electrolyte wherein a chlorinated PVC polymer is a solid and an aprotic solvent is a liquid. The aprotic solvent is absorbed by the polymer to create a gel electrolyte without free liquid volume. Therefore, this argument is not persuasive. The electrolyte of Chia is a lithium-ion conducting polymer membrane which acts

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both as the separator and as the electrolyte (2:53-56). Applicant argues the “trapping” or “absorption” of the solvent in the polymer electrolyte of the prior art is not like that of the claimed invention. *Examiner requests that Applicant clarify where the solvent of the claimed invention is located in the claimed polymer electrolyte if it is not “a solid” (Applicant has admitted it is a liquid), “trapped” or “absorbed”.*

For arguments regarding the declaration filed on 11/25/05, see discussion above.

35 U.S.C. 103(a) of Alamgir (US5,252,413) in view of Chia and/or Chang

Applicant disagrees with the motivation to combine the cited prior art and presents arguments regarding lithium ion conductivities. However, the motivation statement provided by the Examiner did not recite anything about lithium ion conductivities and the claimed invention does not contain any limitations regarding lithium ion conductivities (arguments not commensurate in scope). Examiner stated the use of chlorinated PVC shows enhanced high temperature stability of the battery and mechanical integrity of the separator/polymer (Chia; col. 3, lines 6-33). Furthermore, Alamgir teaches a typical solid electrolyte comprises an aprotic solvent (propylene carbonate) containing a lithium salt (LiClO_4) immobilized in PVC. The electrolyte has conductivities of $0.9 \times 10^{-3} \text{ ohm}^{-1}\text{cm}^{-1}$ ($0.9 \times 10^{-3} \text{ S/cm}$) at 20°C (2:18-22).

It is important to point out that the PVC or C-PVC polymers of the prior art are not the only component of the polymer electrolyte that effects lithium ion conductivity. Specifically, the lithium salt and/or aprotic solvent significantly effects the ability of the polymer electrolyte to conduct lithium ions.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday-Thursday (9:00-7:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



TRACY DOVE
PRIMARY EXAMINER

January 30, 2006